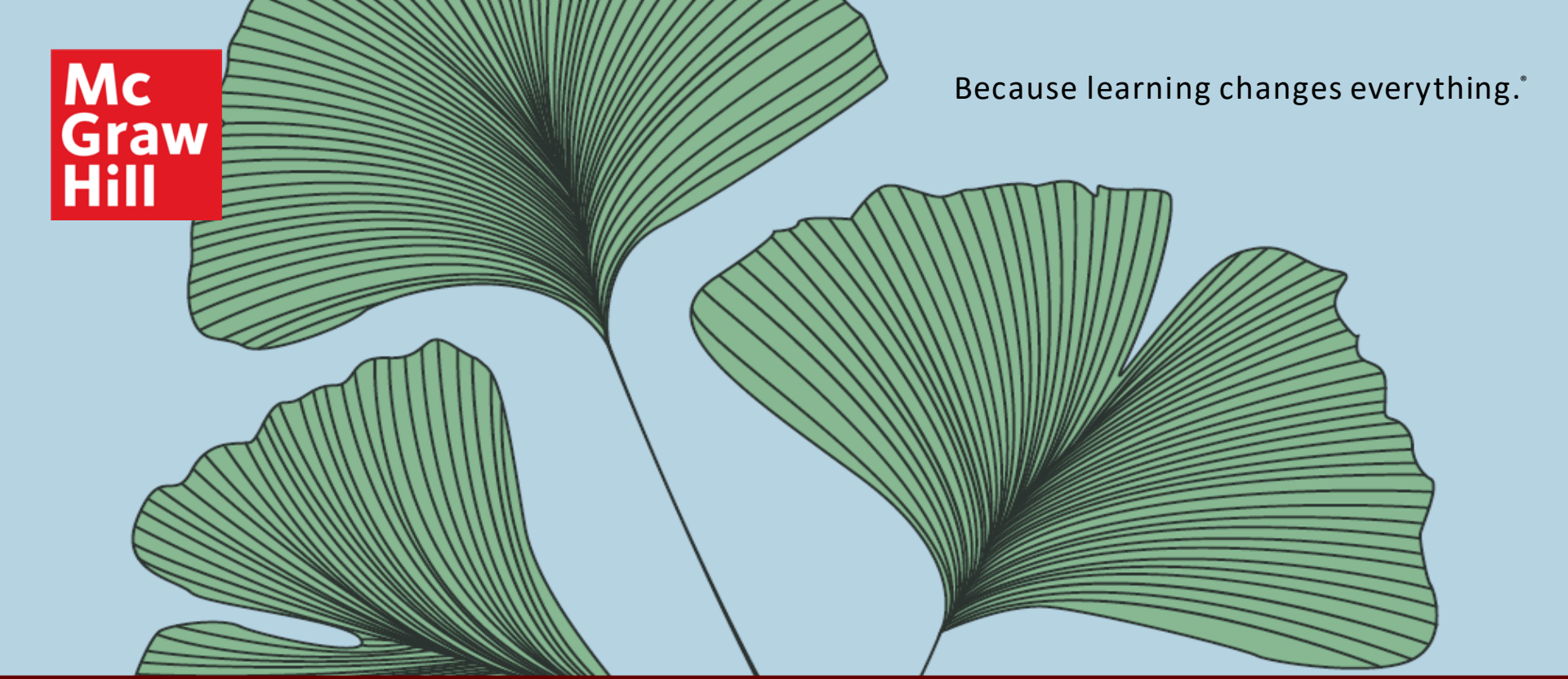

Chapter 1

Thinking Like an Economist

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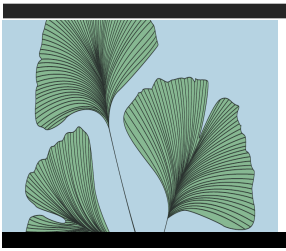

Learning Objectives

1. Explain why having more of any good thing necessarily requires having less of something else.
2. Explain and apply the ***Cost-Benefit Principle***, which says that an action should be taken if, but only if, its benefit is at least as great as its cost.
3. Discuss three important pitfalls that occur when applying the *Cost-Benefit Principle* inconsistently.
4. Explain why if you want to predict people's behavior, a good place to start is by examining their incentives.

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Economics: Studying Choice in a World of Scarcity

Economics: The study of how people make choices under scarcity and the results of these choices for society.

Scarcity and trade-offs: We have boundless wants, but resources are limited. Having more of one good thing usually means having less of another.

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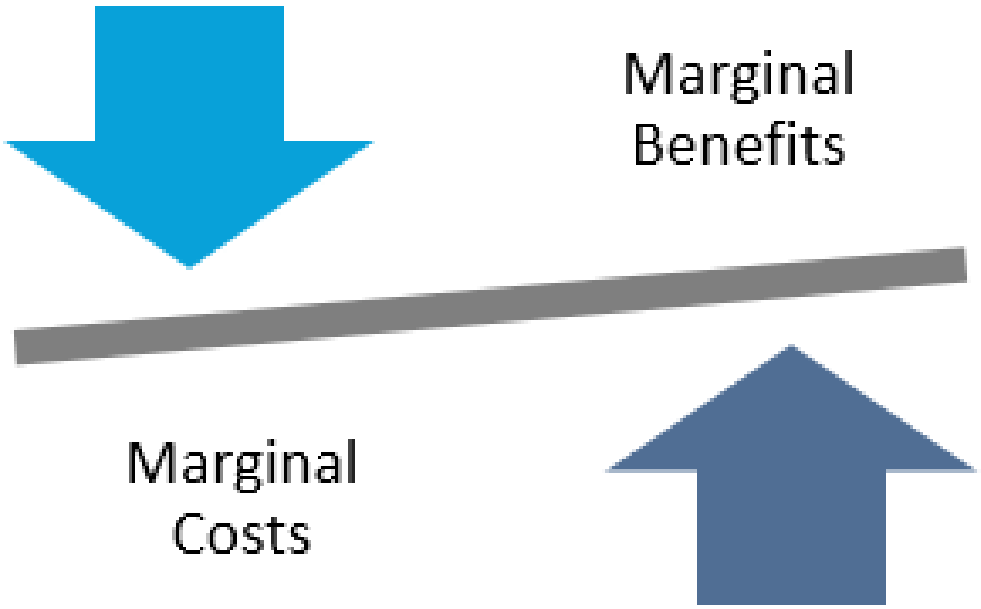
The Cost-Benefit Principle

- Take an action if and only if the extra benefits are at least as great as the extra costs.
- Costs and benefits are not just money.



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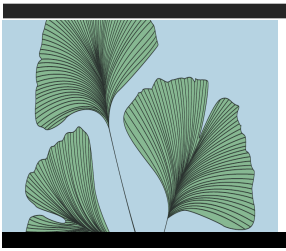

Applying the Cost-Benefit Principle

Assume people are rational.

- A **rational person** has well defined goals and tries to fulfill those goals as best they can.

Would you walk to town to save $10 on an item?

- Benefits are clear ($10).
- But what are the "costs of walking to town"?

Hypothetical auction.

- Would you walk to town if the savings were $1,000?
- How about savings of $500? $100? $50?
- If you would walk to town for savings of $9, but not for savings of $8.99, then your costs of walking must be $9!

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Cost-Benefit Principle Examples

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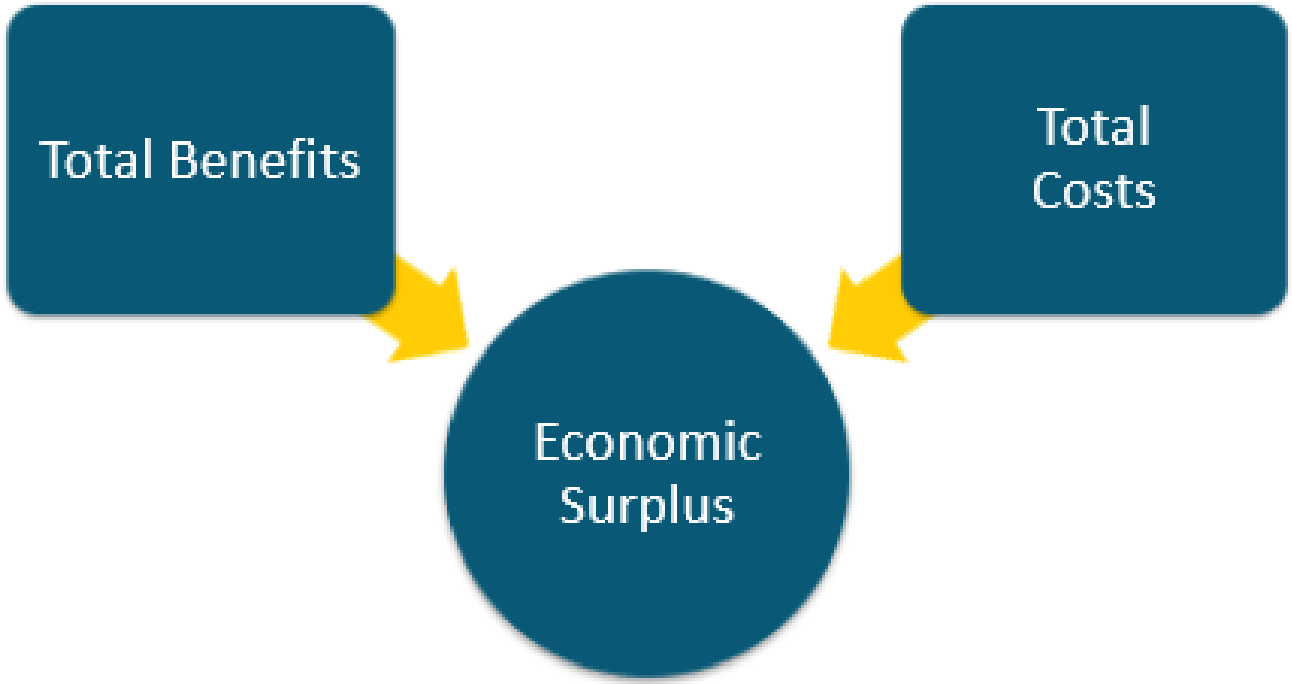
Economic Surplus 1

- The **economic surplus** of an action is equal to its benefit minus its costs.



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Economic Surplus 2

- The **economic surplus** of an action is equal to its benefit minus its costs.
- **Economic surplus = Total Benefits –Total Costs.**
- If we get $10 of savings from walking to town, and our costs of walking to town are $9, then the *economic surplus* from walking to town is $10 – $9 = $1.

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Opportunity Cost

Opportunity cost is the value of what must be foregone in order to undertake an activity.

- Consider explicit and implicit costs.

Examples:

- Give up an hour of dogwalking to go to the movies.
- Give up watching your favorite Netflix show to walk to town.

Caution: NOT the combined value of all possible activities.

- **Opportunity cost considers only your best alternative.**

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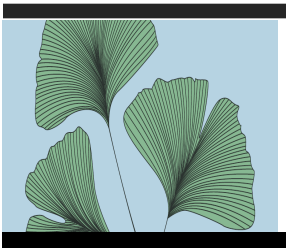

Economic Models

Simplifying assumptions.

- Which aspects of the decision are absolutely essential?
- Which aspects are irrelevant?

Abstract representation of key relationships.

- The *Cost-Benefit Principle* is a model.
  - **If costs of an action increase, the action is less likely.**
  - **If benefits of an action increase, the action is more likely.**

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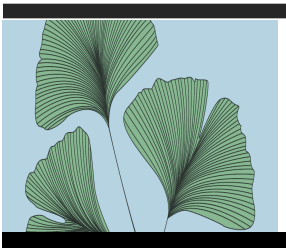

Three Decision Pitfalls

- Economic analysis predicts likely behavior.
- Three general cases of mistakes.

1. Measuring costs and benefits as proportions instead of absolute amounts.
2. Ignoring implicit costs.
3. Failure to think at the margin.

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Pitfall #1

Measuring costs and benefits as proportions instead of absolute amount

Would you walk to town to save $10 on a $25 item?

Would you walk to town to save $10 on a $2,500 item?

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Pitfall #2

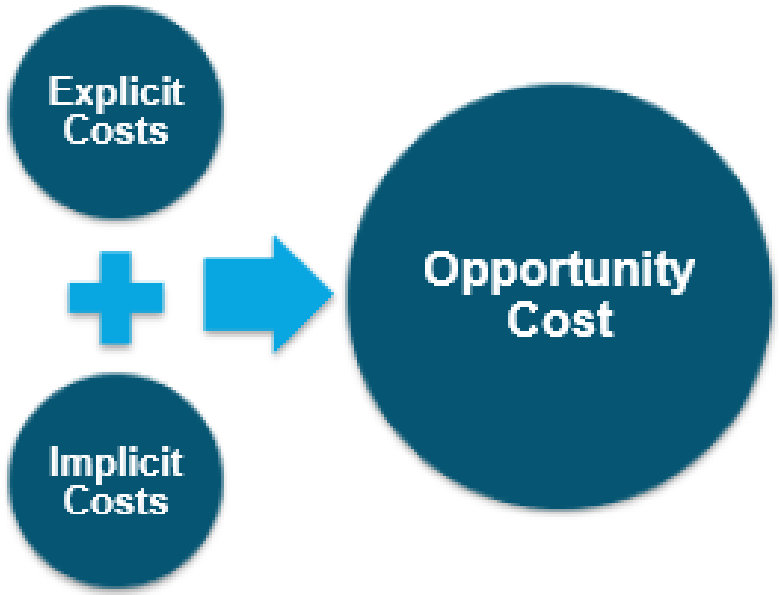
Ignoring implicit costs.

Consider your alternatives.

- If you win a free concert ticket, it isn't really "free".

What else would you have done with your evening?

Does going to the concert make you give up some other great activity?



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Pitfall #3

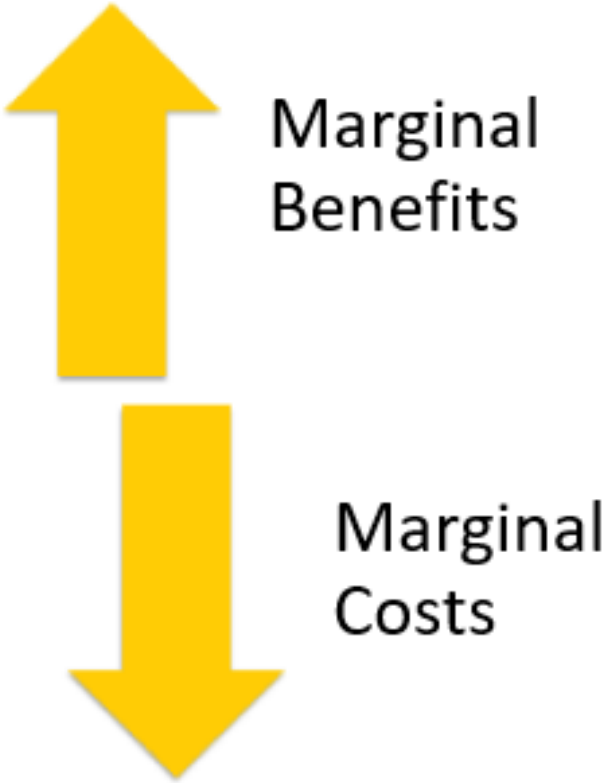
Failure to think at the margin.

Sunk costs cannot be recovered

- Examples:

Eating at an all-you-can-eat restaurant.

Attend a second year of law school.



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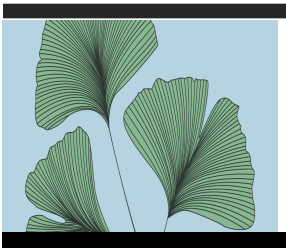

Marginal Analysis Ideas

Marginal cost is the increase in total cost that results from carrying one additional unit of an activity.

- **Average cost** is total cost divided by the number of units.

Marginal benefit is the increase in total benefit that results from carrying out one additional unit of an activity.

- **Average benefit** is total benefit divided by the number of units.

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Marginal Analysis: SpaceX Rocket

# of Launches	Total Cost ($B)	Marginal Cost ($B)
0	$0	
1	$3	$3
2	$7	$4
3	$12	$5
4	$20	$8
5	$32	$12

If the marginal benefit is $6 billion per launch, how many launches should SpaceX make?

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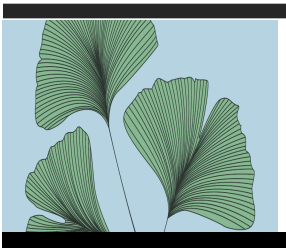

Normative and Positive Economics

- **Normative economic principle** says how people *should* behave.

People shouldn't pollute so much.

SpaceX should launch as many rockets as possible.

- **Positive economic principle** predicts how people *will* behave.

People will pollute less if you tax pollution.

SpaceX will choose to launch rockets that it believes will be profitable.

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Incentive Principle

Incentives are central to people's choices.

Benefits	Costs
Actions are more likely to be taken if their benefits rise	Actions are less likely to be taken if their costs rise

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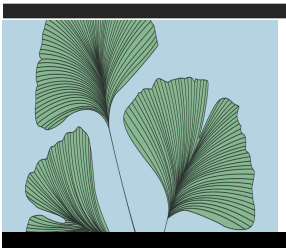

Microeconomics and Macroeconomics

Microeconomics studies choice and its implications for price and quantity in individual markets.

Sugar.

Carpets.

House cleaning services.

Microeconomics considers topics such as.

Costs of production.

Demand for a product.

Exchange rates.

Macroeconomics studies the performance of national economies and the policies that governments use to try to improve that performance.

Inflation.

Unemployment.

Growth.

Macroeconomics considers.

Monetary policy.

Deficits.

Tax.

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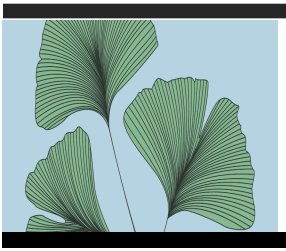

Economics Is Choosing

Focus on a short list of core ideas that will be referenced and repeated throughout the text.

- Explain many economic issues.
- Predict decisions made in a variety of circumstances.

Core ideas and principles are the foundation for solving economic problems.

- Think critically and apply to real-life scenarios.

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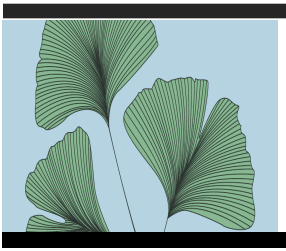

Economics Is Everywhere

There are many things that economics can help to explain.

Economic Naturalist topics.

- Why is expensive software bundled with computers?
- Why can't you buy a car without heaters.
- Drive-up ATMs with Braille dots.

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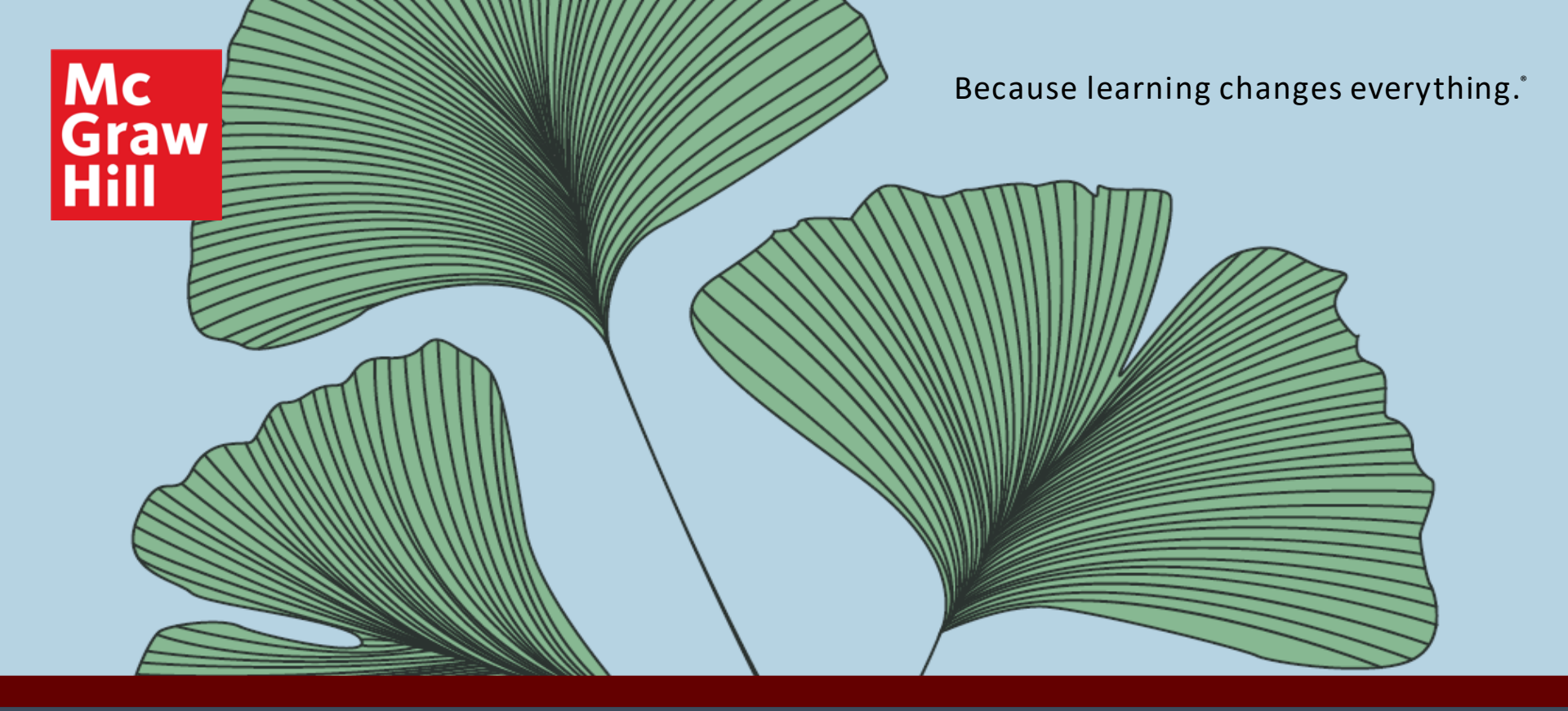

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Chapter 1 Appendix

Working with Equations, Graphs, and Tables

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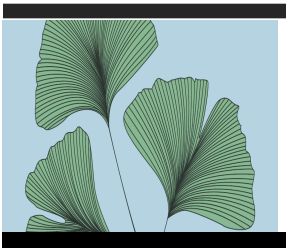

Definitions 1

Equation a mathematical expression that describes the relationship between two or more variables.

Variable a quantity that is free to take a range of different values.

- **Dependent variable** a variable in an equation whose value is determined by the value taken by another variable in the equation.
- **Independent variable** a variable in an equation whose value determines the value taken by another variable in the equation.

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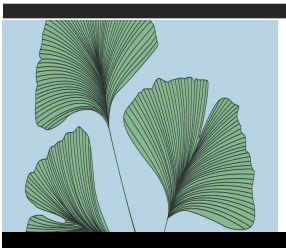

Definitions 2

Constant (***or parameter***) a quantity that is fixed in value.

- **Vertical intercept** in a straight line, the value taken by the dependent variable when the independent variable equals zero.
- **Slope** in a straight line, the ratio pf the vertical distance the straight line travels between any two points (***rise***) to the corresponding horizontal distance (***run***).

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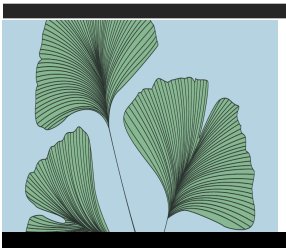

From Words to an Equation

Identify the variables.

Calculate the parameters.

- Slope.
- Intercept.

Write the equation.

Example: Scooter rental charges $1 to unlock the scooter plus 20 cents per minute.

$$B = 1 + 0.20T$$

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From Equation to Graph

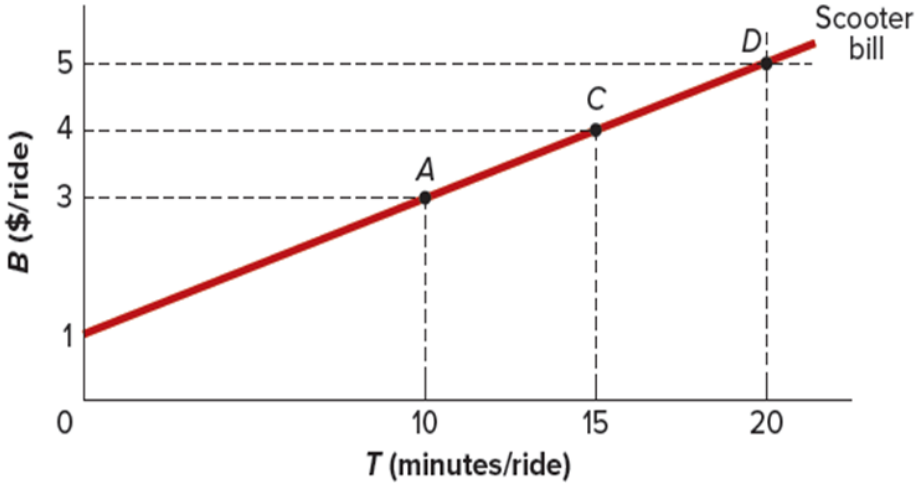
$$B = 1 + 0.20T$$

Draw and label axes.

- Horizontal is independent variable.
- Vertical is dependent variable.

To graph,

- Plot the intercept.
- Plot one other point.
- Connect the points.



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From Graph to Equation

Identify variables.

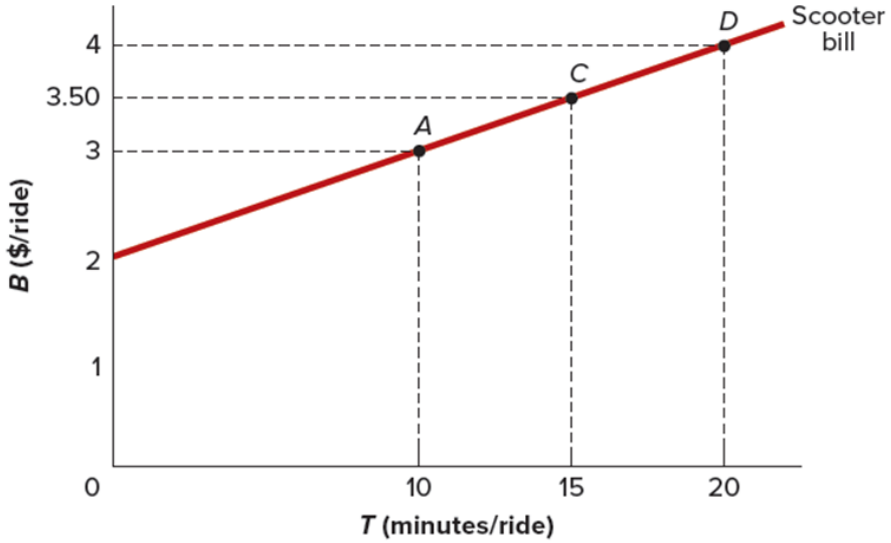
- Independent.
- Dependent.

Identify parameters.

- Intercept.
- Slope.

Write the equation.

$$B = 2 + 0.10T$$



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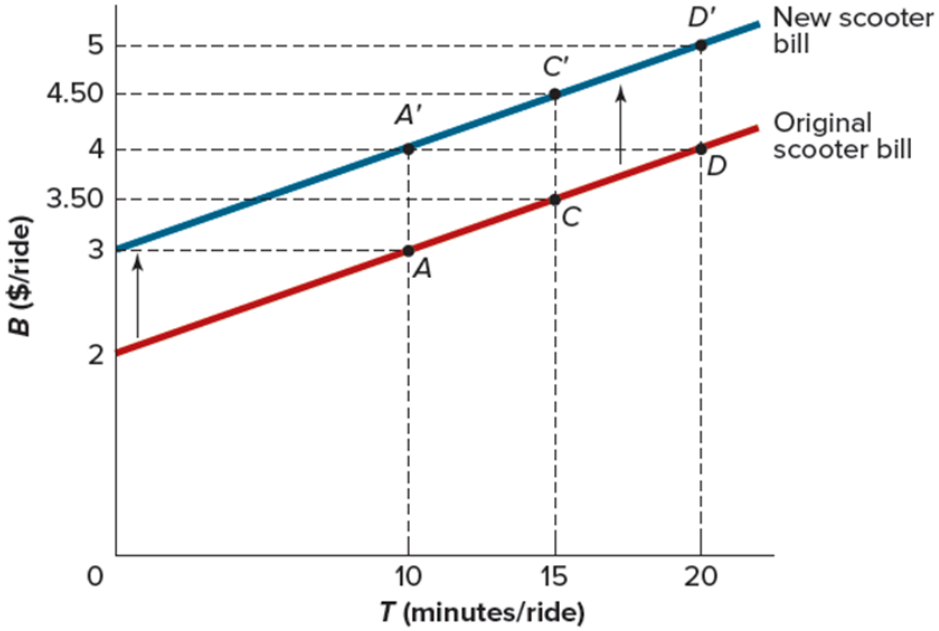
Changes in the Intercept

An increase in the intercept shifts the curve up.

- Slope is unchanged.
- Caused by an increase in the fee.

A decrease in the intercept shifts the curve down.

- Slope is unchanged.



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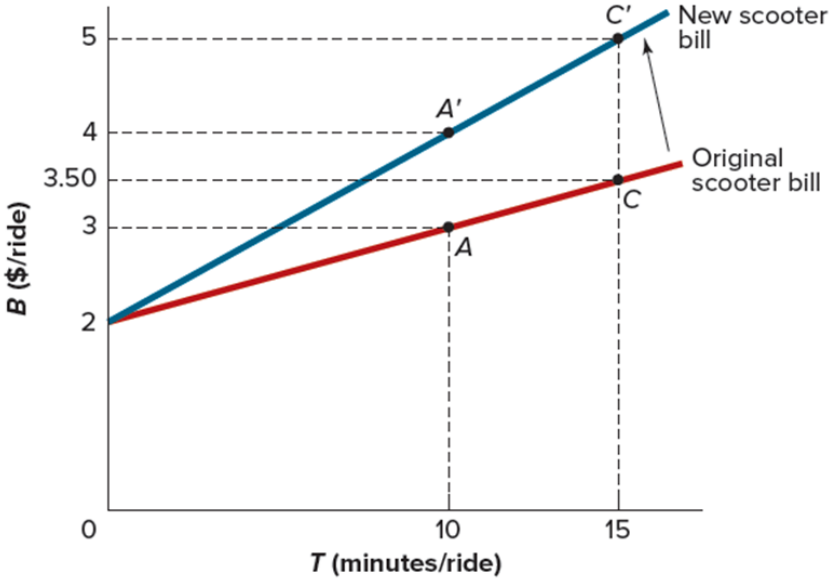
Changes in the Slope

An increase in the slope makes the curve steeper.

- Intercept is unchanged.
- Caused by an increase in the per minute fee.

A decrease in the slope makes the curve flatter.

- Intercept is unchanged.



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From Table to Graph

Total bill ($/ride)	Length of ride (minutes/ride)
$2.50	5
$3.75	10
$5.00	15
$6.25	20

Identify variables.

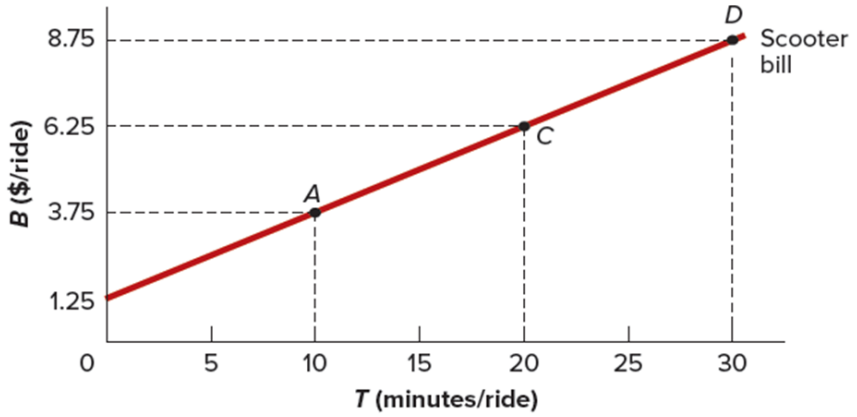
Independent.

Dependent.

Label axes.

Plot points.

Connect points.



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From Table to Equation

Long-distance bill ($/month)	Total long-distance calls (minutes/month)
$2.50	5
$3.75	10
$5.00	15
$6.25	20

- Identify independent and dependent variables.
- Calculate slope.

Slope = (6.25 – 3.75) / (20 – 10) = 2.50/10 = 0.25.

- Solve for intercept, *f*, using any point.

$B = f + 0.25T$

$6.25 = f + 0.25(20) = f + 5$

$f = 6.25 - 5 = 1.25$

$B = 1.25 + 0.25T$.

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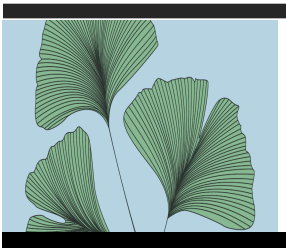

Simultaneous Equations 1

Two equations, two unknowns.

Solving the equations gives the values of the variables where the two lines intersect.

- Lines intersect when the values of the independent and dependent variables are the same in the equations for both lines.

Example.

- Two companies for electric scooter rentals.
  - How many minutes long would your rides have to be to make the two companies break even?

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Simultaneous Equations 2

- Company 1.

$B = 0.50 + 0.30T$

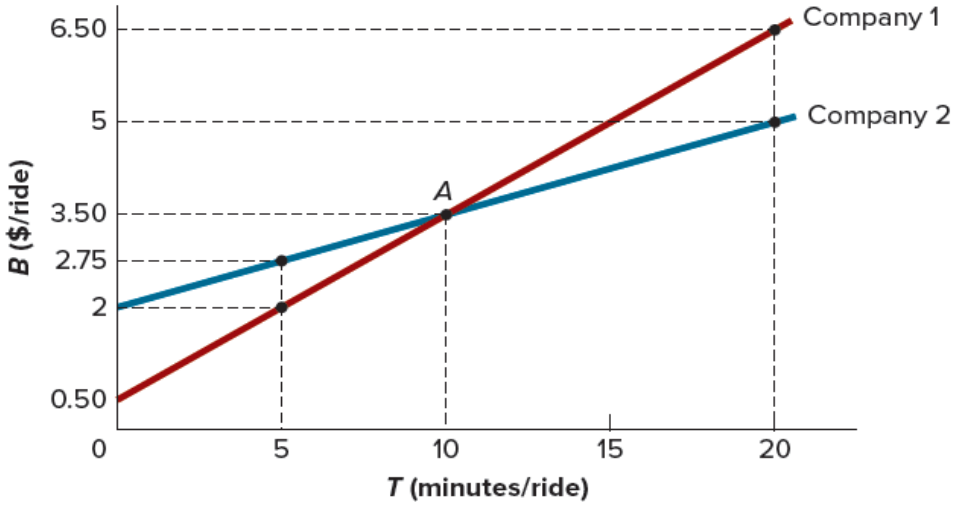
- Company 2.

$B = 2 + 0.15T$

Company 1 has higher per minute price while.

Company 2 has a higher unlocking fee.

Find *B* and *T* for point A.



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Simultaneous Equations 3

- Company 1 $B = 0.50 + 0.30T.$
- Company 2 $B = 2 + 0.15T.$
- Subtract Company 2 equation from Company 1 and solve for $T.$

$$B = 0.50 + 0.30T$$
$$\underline{-B = -2 - 0.15T}$$
$$0 = -1.5 + 0.15T$$

$$\boldsymbol{T = 10}$$

Find B when $T = 10$

$B = 0.50 + 0.30T$

$B = 0.50 + 0.30(10)$

$\boldsymbol{B = \$3.50.}$

OR

$B = 2 + 0.15T$

$B = 2 + 0.15(10)$

$\mathbf{B = \$3.50.}$

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